DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 11-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 11 is vague and indefinite with respect to applicant is claiming the well cooler or the well cooler assembly from the instant claim as set forth. Further it appears that the "means that prevent" is in improper means plus function language. The examiner suggests the use of the phrase, "means for preventing" in place of the present phrase. Further claims 12-18 and 21 are vague and indefinite since it appears that these are all features that are external to the well cooler and the well cooler has not been instantly claimed as an assembly. Further, claims 19 and 20 are vague and indefinite with respect to whether the well cooler is needed since the cathodic protection system and ship of claims 19 and 20 only recite the need of the means that protects an element from stray current.

Correction and/or clarification are requested.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 11-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schwabe et al (6261439) in combination with EP 1233159.

Schwabe et al disclose a cathodic protection system that utilizes dynamic control of an output from a power supply to vary an impressed current applied to a structure to be protected proportional to a measurement of stray electrical current. See abstract. The system provides protection of either metallic or non-metallic conductive elements or submarine structures or equipment from damage caused by the influence of external stray currents and aggressive sea media. This provides cathodic protection of metallic elements submersed in sea water from both electrolytic and galvanic corrosion and protection of non-metallic elements from electrolytic dissolution of conductive particles in the elements. See col. 3, lines 47-58. A station has a measuring and control unit 24 that receives a control signal 25 from a reference electrode 26. S current density sensor 27 is located underwater near the station 23 and provides a current density signal 28 to the measuring and control unit that is connected to a DC power supply. that is connected from its positive terminal 29a to a plurality of anode beds 30 and its negative terminal 29b to a cable 21a. See col. 4, lines 11-20. In operation, the measuring and control unit monitors the signal from the current density sensor and from the reference electrode in real time, then directing the power supply to increase or decrease the power flowing to the anode beds to render the cable 21a relatively more negative than the anode beds, thus the stray currents preferably enter the anode bed in stead of the cable 21a, to protect the cable. See col. 4, lines 24-30. A component of the inventive

system is the current density sensor that has a pair of non-conductive disks 32 and 33 which sandwich a container 34 there between, wherein the container 34 houses an electrode unit 35 connected to a control unit 36. Openings 38 and 39 are provided in the disks 32 and 33, with each opening receiving a respective perforated cap 32a and 33a to allow access of the seawater to the electrode unit. See col. 5, lines 41-51. The electrode unit 36 has a pair of copper electrodes 40 and 41 which are alternatively connected to points A and B via a pair of switch elements 42 and 43 which may have solenoids. Seawater enters the units through the perforated caps and is alternatively fed by valves 42a and 43a to the electrodes 40 and 41 to seawater from points A and B for about 5 to 10 second cycles. This exposes the sensor to the stray electric current field generating an output signal from the electrodes which caries with the frequency of the alternating exposure time. This output signal is amplified and returned to the measurement and control unit. Plastic screens 45a and 45b are also used. See col. 5, lines 52-67. The current density sensor uses a unique orientation of the reference electrodes and mechanical valves to commutate the electric current field potential. The sensor makes use of the plastic screens to effectively increase the separation of reference electrodes without the disadvantage of increased physical spacing between the electrodes. The screens work because they are of much higher electrical resistivity than water and consequentially divert the current fields around the sensor rather than allowing the fields to pass through the sensor. See col. 6, lines 1-15. The valve system commutates the electric field that reaches the reference electrodes. This commutation converts the stray current electric field to an AC signal, while the self potential of the

reference electrodes remains a DC signal. The valves allow for a stray current electric field to pass the electrodes in both directions. The valve system allow for the removal of the self potential of the electrodes, so that it is not necessary to use stable reference electrodes and simple metal electrodes can be used instead. Copper electrodes may be used. See col. 6, lines 1-38. The measurement and control unit and information from the reference electrode and current density sensor, along with a controlled counterbalancing protective current, reduces the effect of the stray currents on the structure. The control unit is a microprocessor based controller. See col. 6, lines 55-65.

The prior art of Schwabe et al does not disclose the well cooler structure.

EP 1233159 ('159) disclose a cooling apparatus for the cooling water of a ships engine having cooling tubes through which the cooling water can be conducted, a tube plate on which the cooling tubes are mounted and at the side of the tube plate facing away from the cooling tubes, a water header which water header has connected stubs for the inlet an outlet of the cooling water wherein a rack is mounted integrated win the cooling apparatus at the nose end of the cooling tubes, at a distance from the tube plate and includes a cathode and at least on copper anode. See abstract. In figure 1 a ship 1 is shown including a cooling apparatus 3 is disclosed. The cooling apparatus is placed in a space behind the ships hull 6, which is made water tight by means of partition plates 4 and 5. Via the openings 7 and 8, seawater can freely enter the space defined by the partition plates and the ships hull. The cooling apparatus is provided with connecting stubs 9 and 10 for inlet or outlet, respectively of cooling water to the ships engine. Theses stubs are a part of the water header 11, which connects to a tube plate

12. Mounted on this tube place 12 are the cooling tubes 13 through which the cooling water flows that is supplied and discharged via the connecting stubs. Anodes and a cathode are disclosed for use with the cooling apparatus so as to feed the cathode and copper anodes with a voltage source. See paragraphs 0015-0018.

The subject matter as a whole would have been obvious to one of ordinary skill in the art at the time the instant invention was made because even though the prior art of Schwabe et al does not disclose the well cooler, it does disclose that such a system is to be used in applications such as that of a submarine where the metallic components are submersed in sea water and are in need of cathodic protection. Since Schwabe et al discloses a system that is used to protect an element through a means of preventing stray current, it would be within the ability of the person having ordinary skill in the art to used such system in connection with protecting a well cooler such as that disclosed in the prior art of EP 1233159, which is subject to corrosion due to the flow of sea water around such cooler and in particular, since the device has the ability to apply a potential between the anode and cathode to prevent corrosion. Since the application of voltage does in fact cause electrical fields around the objects being protected, one having ordinary skill in the art would recognize the importance of using the system of Schwabe et al to further protect the cooler as set forth in the EP document. Therefore, the prior art of Schwabe et al in combination with the EP document, renders the applicants instant invention as obvious for the reasons set forth above.

Response to Arguments

5. Applicant's arguments with respect to claims 11-21 have been considered but are moot in view of the new ground(s) of rejection.

The changes made to claims 12-21 necessitated the new grounds of rejection above since it was unclear as to whether it was the cooler being instantly claimed or the cooler assembly or system being instantly claimed. It appears that the applicant is intending the assembly or system, since the apparatus features being claimed in claims 12-21 appear to be external features to the well cooler and further since the CP system, ship and well cooler having supplemental features are disclosed in the instant claims. Further, claim 11 has been changed to exclude the marine motor and to specifically set forth that the well cooler has a means for preventing which appears to be a part of the cathodic protection system and not the well cooler from the instant claim as now set forth.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bruce F. Bell whose telephone number is 571-272-1296. The examiner can normally be reached on Monday-Friday 6:30 AM - 3:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

BFB
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/Bruce F. Bell/
Primary Examiner, Art Unit 1795